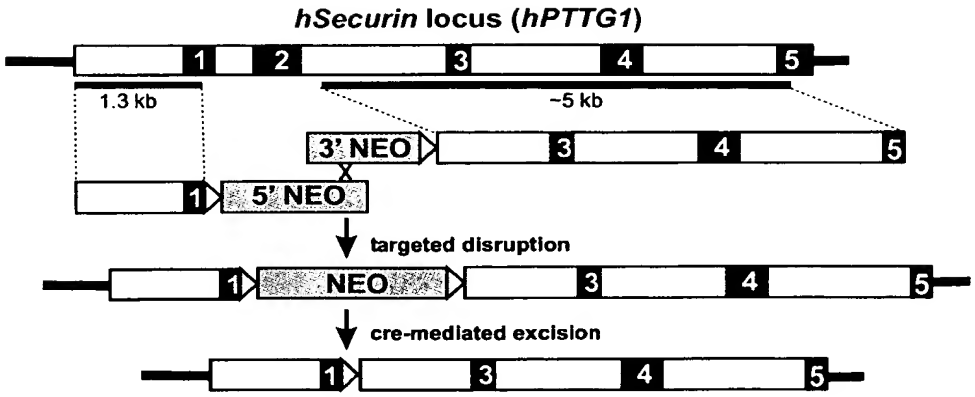
A



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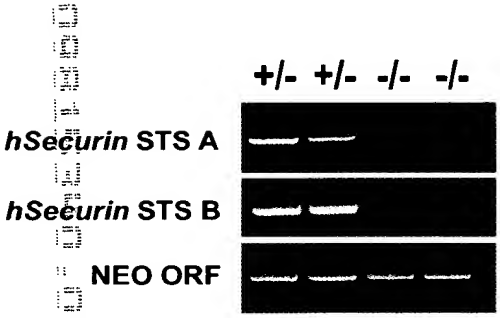

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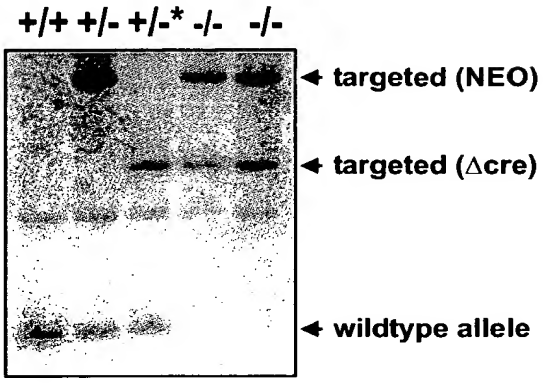
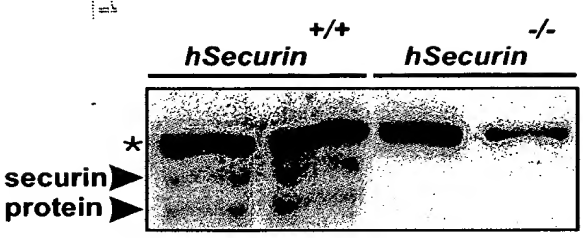
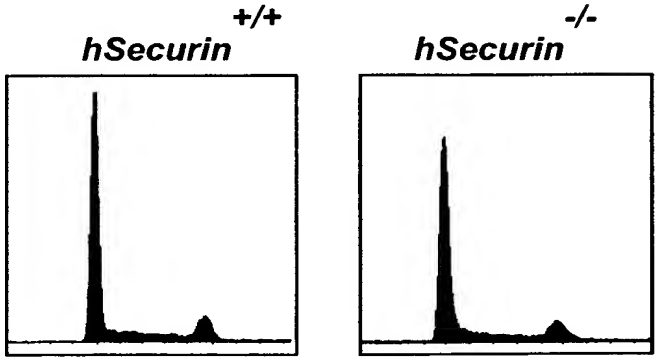


D



E



F

	FACS analysis (%)			cytology (%)		
hSecurin	G1	S	G2/M	apoptosis	mitosis	interphase
+/+	69	17	14	2	1	97
-/-	70	16	14	1.8	0.7	97.5

FIG. 1

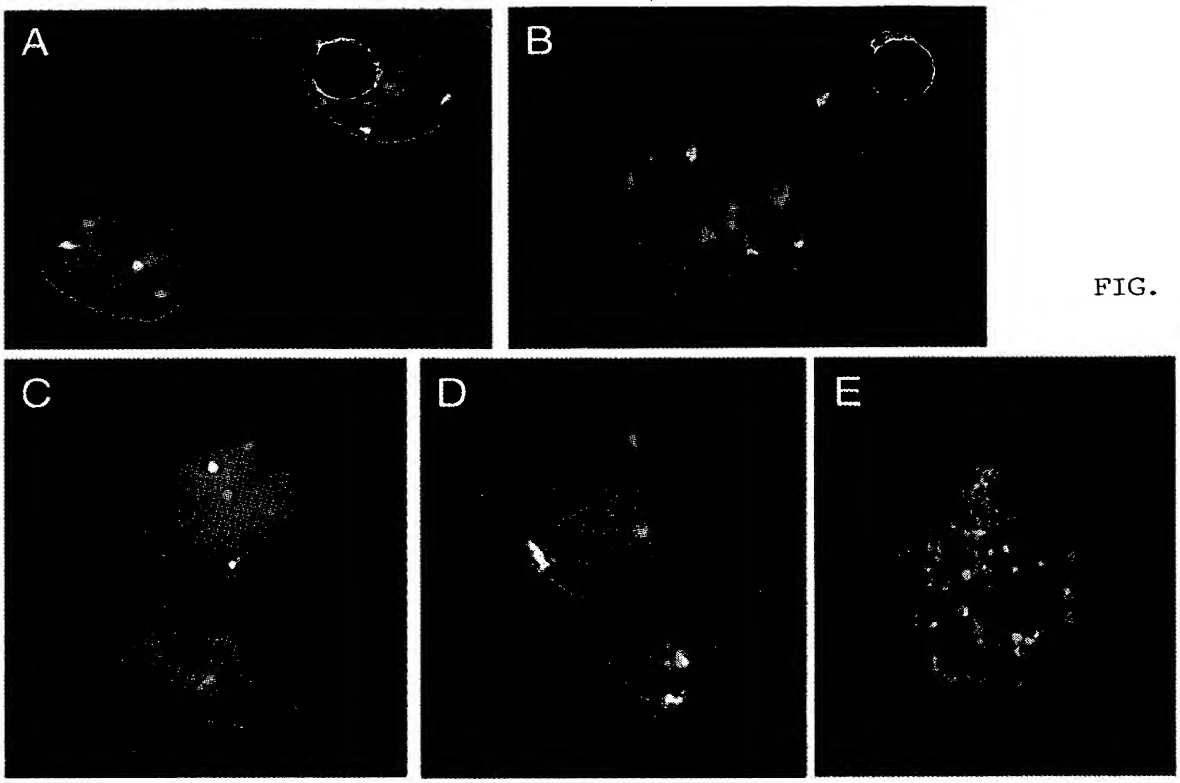
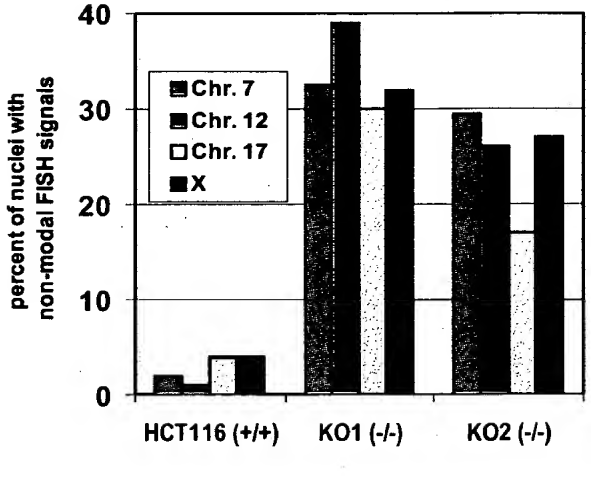


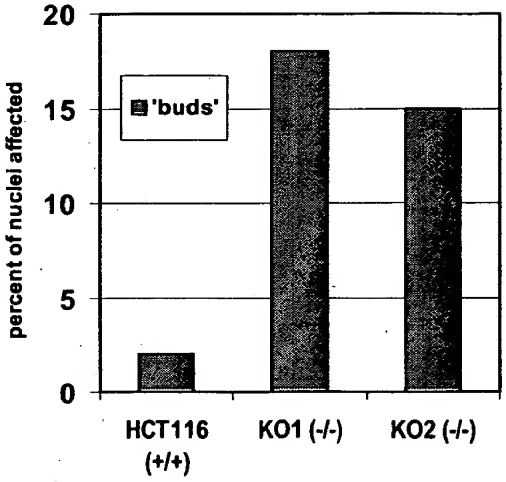
FIG. 2

F

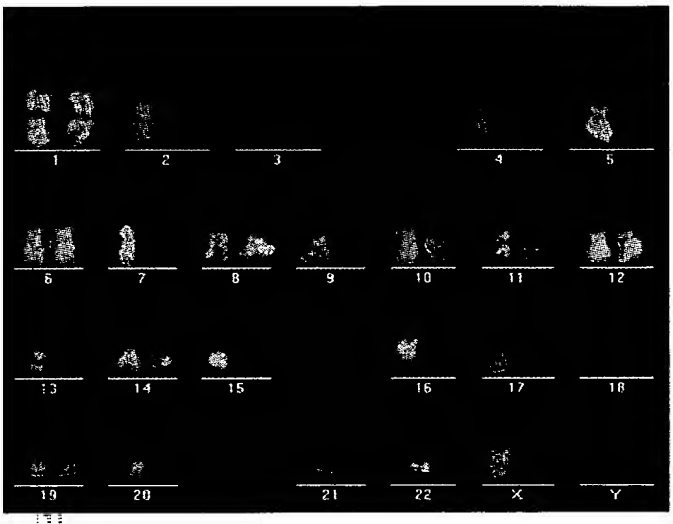
	chromosome analyzed	number of FISH signals per cell 0	1	2	3	4	≥5	% of cells off the mode
HCT116 (+/+)	7	0	2	98	0	0	0	2
	12	0	0	99	1	0	0	1
	17	0	2	96	2	0	0	4
	X	0	96	4	0	0	0	4
KO1 (-/-)	7	0	3	76	8	13	0	24
	12	0	[illegible]	70	7	14	2	30
	17	2	[illegible]	74	13	0	0	26
	X	[illegible]	68	15	2	1	0	32
KO2 (-/-)	7	1	[illegible]	69	8	5	2	31
	12	2	[illegible]	80	3	3	1	20
	17	2	[illegible]	83	4	3	1	17
	X	[illegible]	73	10	1	0	0	27

G



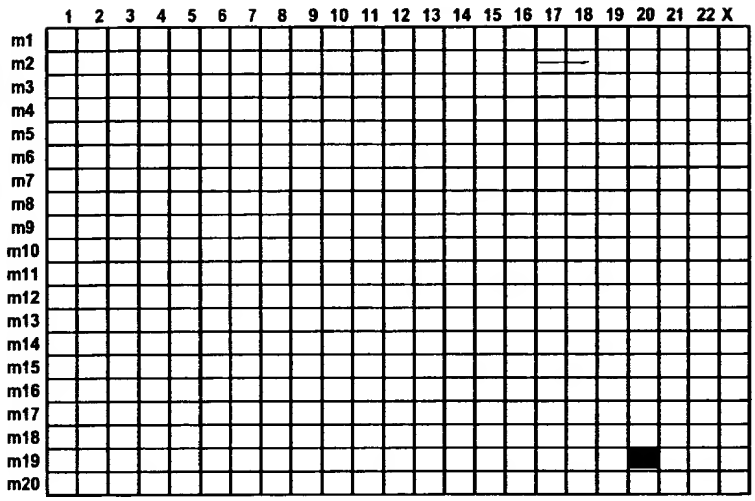


A



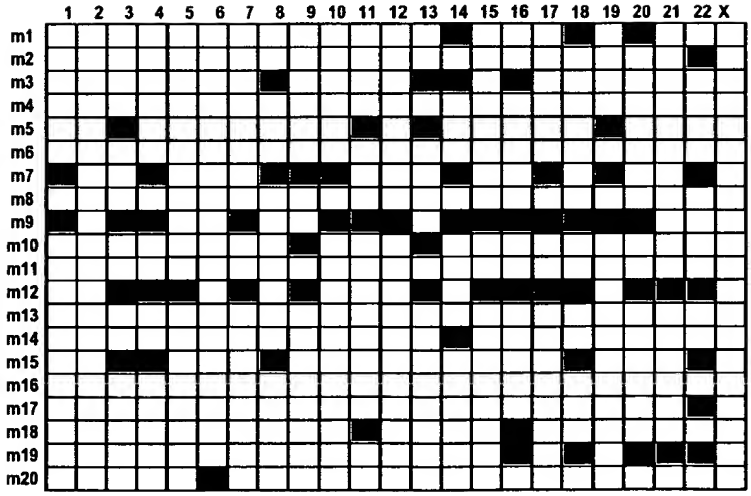
B

hSecurin $^{+/+}$ (parental)



C

hSecurin $^{-/-}$ (KO1)



D

hSecurin $^{-/-}$ (KO2)

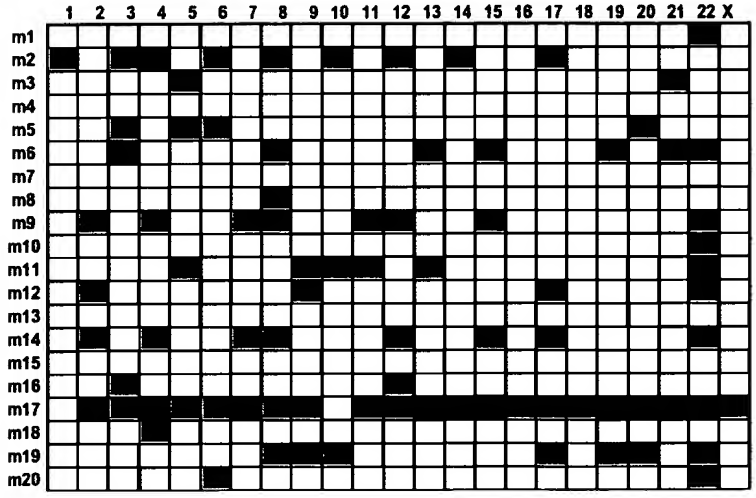
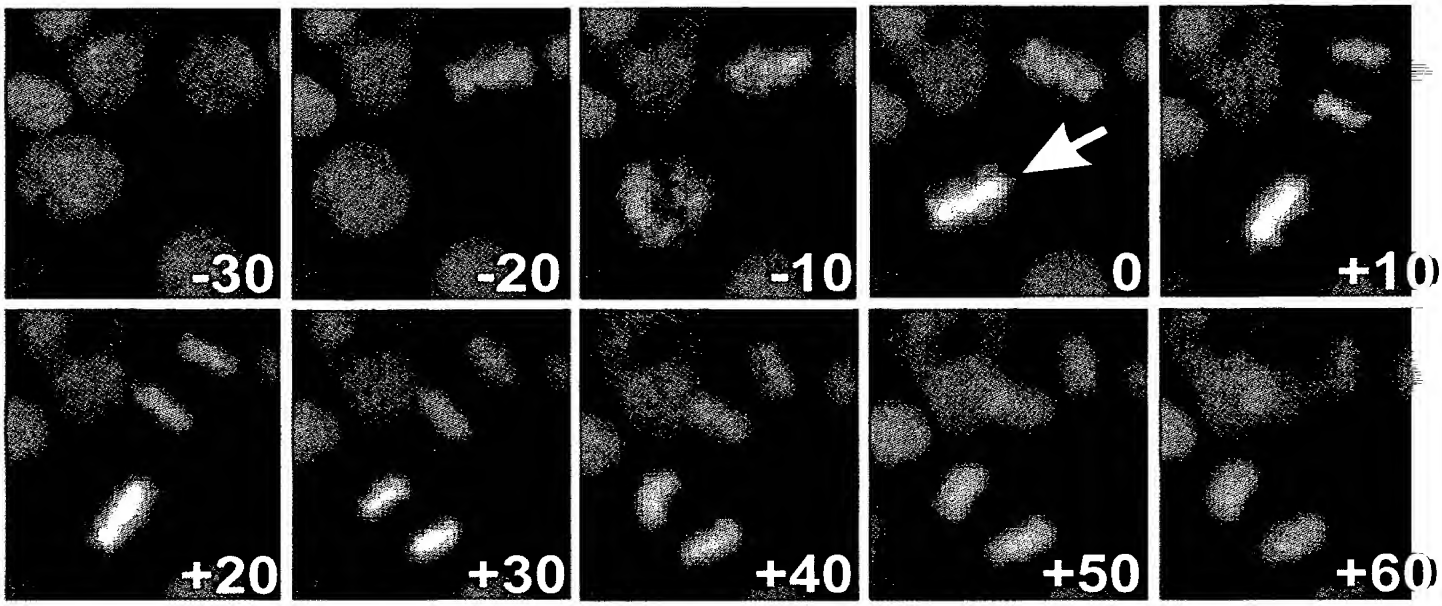
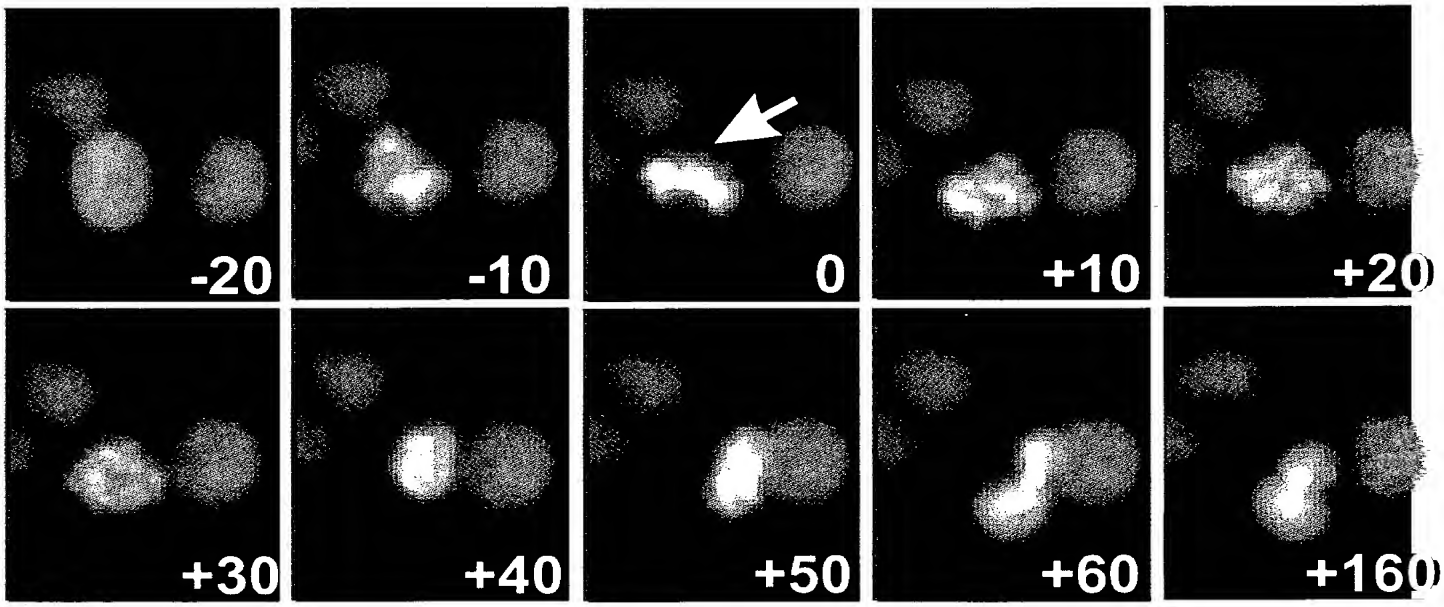


FIG. 3

A



B



C

mitotic interval (minutes)	*hSecurin* +/+	-/-
prophase to metaphase	15	19
metaphase to anaphase	21	57
anaphase to telophase	17	16

FIG. 4

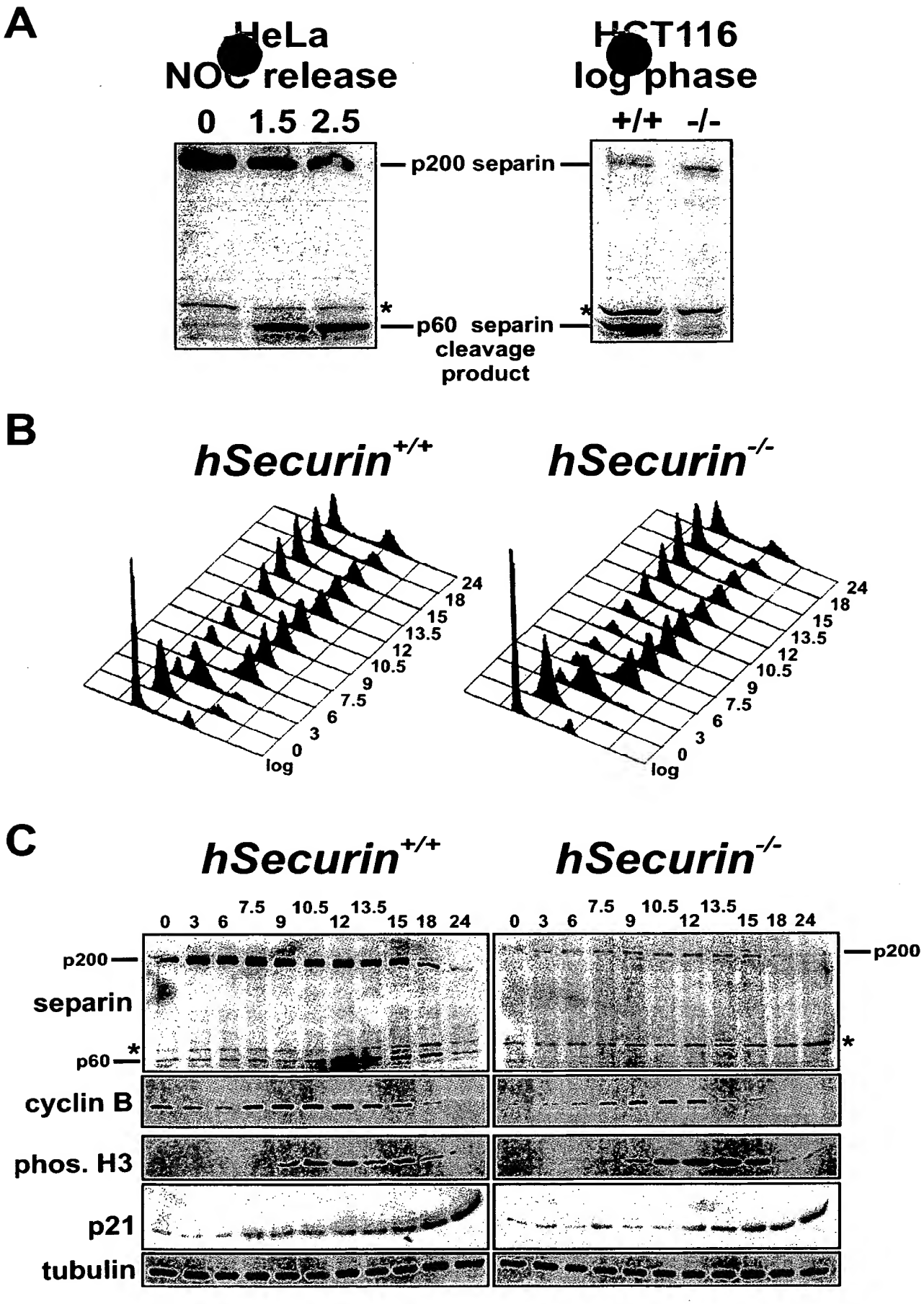

A
HeLa
NOC release
0 1.5 2.5
HCT116
log phase
+/+ -/-
p200 separin
p60 separin
cleavage
product
B
hSecurin+/+
hSecurin-/-
log 0 3 6 7.5 9 10.5 12 13.5 15 18 24
C
hSecurin+/+
hSecurin-/-
0 3 6 7.5 9 10.5 12 13.5 15 18 24
p200
separin
p60
cyclin B
phos. H3
p21
tubulin

FIG. 5

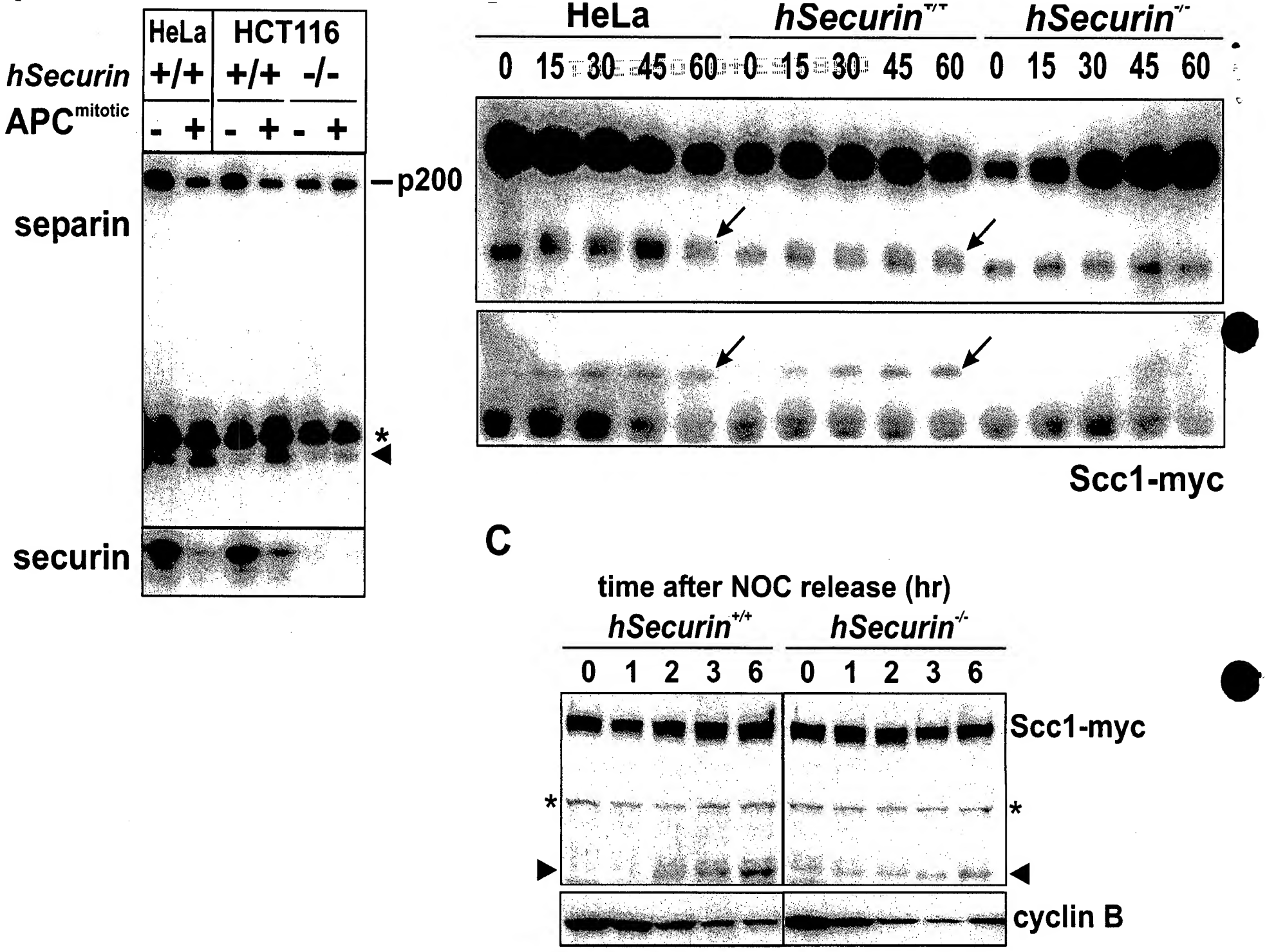

HeLa
HCT116
hSecurin
+/+
+/+
-/-
APC mitotic
- + - + - +
p200
separin
*
securin
HeLa
hSecurin +/+
hSecurin -/-
0 15 30 45 60 0 15 30 45 60 0 15 30 45 60
Scc1-myc
C
time after NOC release (hr)
hSecurin +/+
hSecurin -/-
0 1 2 3 6 0 1 2 3 6
Scc1-myc
*
*
cyclin B

FIG. 6

FROZEN DIGEST

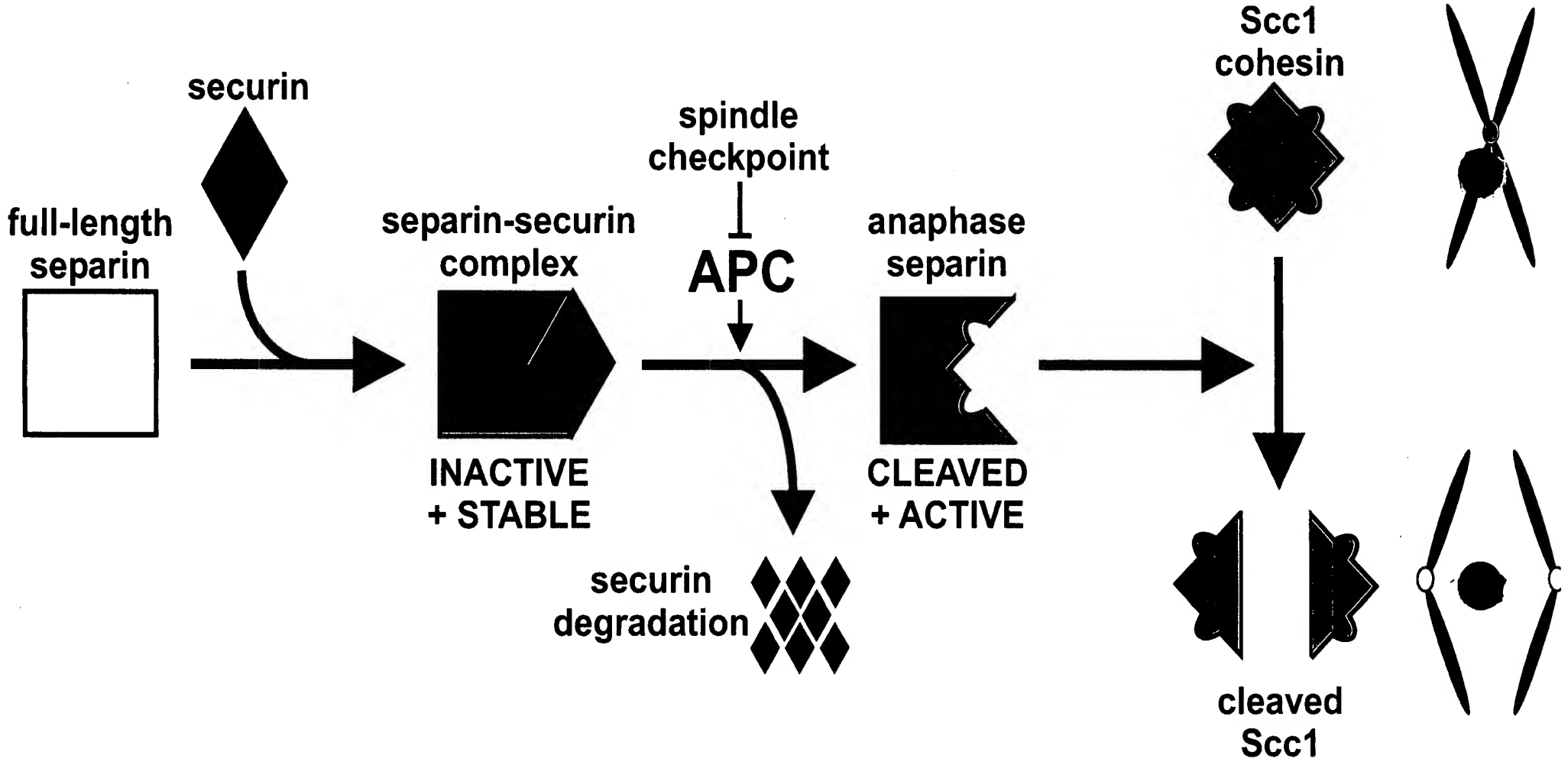


FIG. 7